A. AMENDMENTS TO CLAIMS

Please cancel Claims 22, 26, 32, 60 and 64, add new Claims 69-89 and amend the claims as indicated hereinafter.

1. (PREVIOUSLY PRESENTED) A method for assigning bits to a plurality of channels in a discrete multi-tone modulation communications system, the method comprising:

assigning, to each of one or more channels in a plurality of channels, at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels;

determining an allowable number of bits that can be carried by each of one or more channels using a signal to noise measurement for each of the one or more channels;

for a first group of channels in the plurality of channels, wherein the allowable number of bits that can be carried by each channel in the first group of channels is less than a characteristic minimum bit value for channels in the discrete multi-tone modulation communications system, reducing the determined allowable number of bits for each channel in the first group of channels to zero; and

wherein the specified number of bits satisfies an aggregate constraint on the bits assigned to the plurality of channels, so that a total number of bits assigned to the plurality of channels is equal the specified number of bits.

2. (ORIGINAL) A method as recited in Claim 1, wherein assigning at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels includes assigning at least a portion of the specified number of bits based on a signal to noise characteristic of each of the one or more channels.

3. (ORIGINAL) A method as recited in Claim 1, further comprising:

selecting a set of active channels from the plurality of channels;

assigning to each channel in the set of active channels at least a portion of the specified number of bits; and

assigning zero bits to each of the plurality of channels not in the active set of channels.

4. (ORIGINAL) A method as recited in Claim 3, further comprising using a performance characteristic of each channel in the plurality of channels to select the set of active channels from the plurality of channels.

5. (ORIGINAL) A method as recited in Claim 4, wherein using the performance characteristic of each channel in the plurality of channels includes using a signal to noise measurement for each channel in the plurality of channels to select the set of active channels from the plurality of channels.

6. (ORIGINAL) A method as recited in Claim 1, further comprising, determining a number of bits that can be carried by each of the one or more channels using a signal to noise measurement for each of the one or more channels, and reducing the determined number of bits that can be carried by each of the one or more channels by an increment bit value so that the total number of bits assigned to the one or more channels is equal to the specified number of bits.

7. (ORIGINAL) A method as recited in Claim 6, wherein reducing the determined number of bits that can be carried by each of the one or more channels by an increment bit value includes reducing the determined number of bits that can be carried by each of the one or more channels by an equal amount.

8. (ORIGINAL) A method as recited in Claim 6, wherein reducing the determined number of bits that can be carried by each of the one or more channels by an increment bit value includes reducing the determined number of bits that can be carried by each of the one or more channels by an amount that is based on a characteristic minimum and maximum bit value for that channel.

9. (CANCELED)

10. (PREVIOUSLY PRESENTED) A method as recited in Claim 1, wherein for a second group of channels in the plurality of channels, the allowable number of bits that can be carried by each channel in a second group of channels is greater than the characteristic minimum bit value, and wherein the method further comprises reducing the number of bits that can be carried by each of the channels in the second group of channels by at least an incremental value.

11. (ORIGINAL) A method as recited in Claim 10, wherein the method further comprises reducing the number of bits that can be carried by each of the channels in the second group by at least an incremental value only after reducing the determined allowable number of bits for each channel in the first group to zero.

12. (ORIGINAL) A method as recited in Claim 10, wherein the method further comprises reducing the number of bits that can be carried by one or more of the channels in the second group by one until a total number of bits that can be carried by the plurality of channels is equal to the specified number of bits.

13. (ORIGINAL) A method as recited in Claim 1, further comprising assigning a gain value to at least some of the plurality of channels based on the performance characteristic of the at least some of the plurality of channels.

14. (ORIGINAL) A method as recited in Claim 1, further comprising assigning a gain value to the one or more channels based on the performance characteristic of each channel in the one or more channels so that a margin of each channel in the one or more channels is approximately equal.

15. (PREVIOUSLY PRESENTED) A method for assigning bits to channels in a discrete multi-tone modulation communications system, the method comprising:

determining an initial number of bits that can be assigned to each channel in a set of active channels based on the performance characteristic of each channel in the set of active channels;

identifying, from the set of active channels, a first group of channels and a second group of channels, wherein the initial number of bits that can be assigned to each channel in the first group of channels is less than or equal to the initial number of bits that can be assigned to each channel in the second group of channels; and

reducing an aggregate number of bits assigned to the set of active channels so as to satisfy an constraint on the aggregate number of bits that can be assigned to the set of active channels by designating one or more channels in the first group of channels to be assigned zero bits.

16. (CANCELED)

17. (PREVIOUSLY PRESENTED) A method as recited in Claim 15, wherein reducing an aggregate number of the bits assigned to the set of active channels includes designating one or more channels in the first group of channels to be assigned zero bits until the aggregate number of the bits satisfies the constraint on the aggregate number of bits.

18. (PREVIOUSLY PRESENTED) A method as recited in Claim 15, further comprising determining an initial bit reduction amount for channels in the second group of channels, and wherein reducing an aggregate number of the bits assigned to the set of active channels includes reducing the initial number of bits assigned to one or more channels in the second group of channels by the initial bit reduction amount after designating all of the channels in the first group of channels to be assigned zero bits.

19. (ORIGINAL) A method as recited in Claim 18, wherein determining an initial bit reduction amount for channels in the second group of channels includes selecting the initial bit reduction amount so as to not reduce the aggregate number of the bits below a maximum allowable number of bits that satisfies the constraint on the aggregate number of bits.

20. (ORIGINAL) A method as recited in Claim 19, wherein selecting the initial bit reduction amount includes selecting the initial bit reduction so as to reduce the aggregate

number of the bits to an amount that is equal to or in between the maximum allowable number of bits and a sum of the maximum allowable number of bits and a number of channels in the second group of channels, and wherein reducing an aggregate number of the bits assigned to the set of active channels includes, after reducing the initial number of bits assigned to all of the channels in the second group of channels by the initial bit reduction amount, further reducing the bits assigned to channels in the second group of channels by one until the aggregate number of the bits is equal to the maximum allowable number of bits.

21. (CURRENTLY AMENDED) A method for assigning gain values to a plurality of channels in a discrete multi-tone modulation communications system, the method comprising assigning, to each channel in the plurality of channels, a gain value based upon a performance characteristic and a specified gain limit for each channel in the plurality of channels.

22. (CANCELED)

23. (ORIGINAL) A method as recited in Claim 21, further comprising assigning the gain value to each channel in the plurality of channels so that a sum of the gain values assigned to the plurality of channels satisfies a specified aggregate gain limit.

24. (ORIGINAL) A method as recited in Claim 21, wherein assigning the gain value to each channel is further based upon a number of bits assigned to channel in the plurality of channels.

25. (CURRENTLY AMENDED) A method for assigning bits in a discrete multi-tone modulation communications system, the method comprising:

assigning, to one or more channels in a plurality of channels, a number of bits based on a performance characteristic of each of the one or more channels; and

assigning to the one or more channels a gain value based on the performance characteristic of each of the one or more ~~channels.~~ channels so as to set a margin for each of the one or more channels to be in a specified range.

26. (CANCELED)

27. (ORIGINAL) A method of claim 25, further comprising assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to equalize a margin for each of the one or more channels to be about the same.

28. (ORIGINAL) A method of claim 25, further comprising assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to satisfy a gain constraint on a maximum and a minimum of the gain value for each of the one or more channels.

29. (ORIGINAL) A method of claim 25, further comprising assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to satisfy a gain constraint on an aggregate total of the gain value for each of the one or more channels.

30. (ORIGINAL) A method as recited in claim 25, further comprising assigning to the one or more channels the number of bits based on a signal to noise value for each of the one or more channels.

31. (CURRENTLY AMENDED) An apparatus ~~A receiver~~ comprising:

a bit assignment and adjustment module communicatively configured to assign a number of bits to each of one or more channels in a plurality of channels; and

a gain value module communicatively configured to assign to each of the one or more channels a fine gain value based on the performance characteristic of each of the

one or more ~~channels.~~ channels so as to set a margin for each of the one or more channels to be in a specified range.

32. (CANCELED)

33. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein the gain value module is further configured to assign to the one or more channels the gain value so as to equalize a margin for each of the one or more channels to be about the same.

34. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein the gain value module is further configured to assign to the one or more channels the gain value so as to satisfy a gain constraint on a maximum and a minimum of the gain value for each of the one or more channels.

35. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein the gain value module is further configured to assign to the one or more channels the gain value so as to satisfy a gain constraint on an aggregate total of the gain value for each of the one or more channels.

36. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein the bit assignment and adjustment module is further configured to assign a number of bits to each of one or more channels based on the performance characteristic of each of the one or more channels.

37. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein each performance characteristic is based on a signal to noise ratio for that channel.

38. (CURRENTLY AMENDED) The apparatus ~~receiver~~ of Claim 31, wherein the bit assignment and adjustment module is further configured to determine a number of bits that can be assigned to each of the one or more channels based on the performance characteristic of each of the one or more channels, and to selectively reduce the number

of bits that are assigned to each of the one or more channels so that an aggregate bit total satisfies an aggregate constraint for the number of bits that can be assigned to the one or more channels.

39. (PREVIOUSLY PRESENTED) A computer-readable medium for assigning bits to a plurality of channels in a discrete multi-tone modulation communications system, the computer-readable medium carrying instructions which, when executed by one or more processors, cause the one or more processors to:

assign, to each of one or more channels in a plurality of channels, at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels:

determine an allowable number of bits that can be carried by each of one or more channels using a signal to noise measurement for each of the one or more channels;

for a first group of channels in the plurality of channels, wherein the allowable number of bits that can be carried by each channel in the first group of channels is less than a characteristic minimum bit value for channels in the discrete multi-tone modulation communications system, reduce the determined allowable number of bits for each channel in the first group of channels to zero; and

wherein the specified number of bits satisfies an aggregate constraint on the bits assigned to the plurality of channels, so that a total number of bits assigned to the plurality of channels is equal the specified number of bits.

40. (ORIGINAL) A computer-readable medium as recited in Claim 39, wherein instructions for assigning at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels include instructions for assigning at least a portion of the specified number of bits based on a signal to noise characteristic of each of the one or more channels.

41. (ORIGINAL) A computer-readable medium as recited in Claim 39, further carrying instructions for performing the steps of:

selecting a set of active channels from the plurality of channels;

assigning to each channel in the set of active channels at least the portion of the specified number of bits; and

assigning zero bits to each of the plurality of channels not in the active set of channels.

42. (ORIGINAL) A computer-readable medium as recited in Claim 41, further comprising instructions for using a performance characteristic of each channel in the plurality of channels to select the set of active channels from the plurality of channels.

43. (ORIGINAL) A computer-readable medium as recited in Claim 42, wherein instructions for using the performance characteristic of each channel in the plurality of channels include instructions for using a signal to noise measurement for each channel in the plurality of channels to select the set of active channels from the plurality of channels.

44. (ORIGINAL) A computer-readable medium as recited in Claim 39, further comprising instructions for determining a number of bits that can be carried by each of the one or more channels using a signal to noise measurement for each of the one or more channels, and instructions for reducing the determined number of bits that can be carried by each of the one or more channels by an increment bit value so that the total number of bits assigned to the one or more channels is equal to the specified number of bits.

45. (ORIGINAL) A computer-readable medium as recited in Claim 44, wherein the increment bit value for each of the one or more channels is the same.

46. (ORIGINAL) A computer-readable medium as recited in Claim 44, wherein the increment bit value for each channel is determined based on a characteristic minimum and maximum bit value for that channel.

47. (CANCELED)

48. (PREVIOUSLY PRESENTED) A computer-readable medium as recited in Claim 39, wherein for a second group of channels in the plurality of channels, the allowable number of bits that can be carried by each channel in a second group of channels is greater than the characteristic minimum bit value, and wherein the computer-readable medium further comprises instructions for reducing the number of bits that can be carried by each of the channels in the second group of channels by at least an incremental value.

49. (ORIGINAL) A computer-readable medium as recited in Claim 48, wherein the computer-readable medium further comprises instructions for reducing the number of bits that can be carried by each of the channels in the second group by at least an incremental value only after executing instructions for reducing the determined allowable number of bits for each channel in the first group to zero.

50. (ORIGINAL) A computer-readable medium as recited in Claim 48, wherein the computer-readable medium further comprises instructions for reducing the number of bits that can be carried by one or more of the channels in the second group by one until a total number of bits that can be carried by the plurality of channels is equal to the specified number of bits.

51. (ORIGINAL) A computer-readable medium as recited in Claim 39, further comprising instructions for assigning a gain value to at least some of the plurality of channels based on the performance characteristic of the at least some of the plurality of channels.

52. (ORIGINAL) A computer-readable medium as recited in Claim 39, further comprising instructions for assigning a gain value to the one or more channels based on the performance characteristic of each of the one or more channels so that a margin of each of the one or more channels is approximately equal.

53. (PREVIOUSLY PRESENTED) A computer-readable medium for assigning a specified number of bits to a discrete multi-tone modulation communications system, the computer-readable medium comprising instructions for performing the steps of:

determining an initial number of bits that can be assigned to each channel in a set of active channels based on the performance characteristic of each channel in the set of active channels;

identifying, from the set of active channels, a first group of channels and a second group of channels, wherein the initial number of bits that can be assigned to each channel in the first group of channels is less than or equal to the initial number of bits that can be assigned to each channel in the second group of channels; and

reducing an aggregate number of bits that can be assigned to each channel in the set of active channels so as to satisfy an constraint on the aggregate number of bits for the plurality of channels by designating one or more channels in the first group of channels to be assigned zero bits.

54. (CANCELED)

55. (PREVIOUSLY PRESENTED) A computer-readable medium as recited in Claim 53, wherein instructions for reducing an aggregate number of the bits that can be assigned to the set of active channels include instructions for designating one or more channels in the first group of channels to be assigned zero bits until the aggregate number of the bits satisfies the constraint on the aggregate number of bits.

56. (PREVIOUSLY PRESENTED) A computer-readable medium as recited in Claim 53, further comprising instructions for determining an initial bit reduction amount for channels in the second group of channels, and wherein instructions for reducing an aggregate number of the bits that can be assigned to the set of active channels include instructions for reducing the initial number of bits that can be assigned to one or more channels in the second group of channels by the initial bit reduction amount after designating all of the channels in the first group of channels to be assigned zero bits.

57. (ORIGINAL) A computer-readable medium as recited in Claim 56, wherein instructions for determining an initial bit reduction amount for channels in the second group of channels include instructions for selecting the initial bit reduction amount so as to not

reduce the aggregate number of the bits below a maximum allowable number of bits that satisfy the constraint on the aggregate number of bits.

58. (ORIGINAL) A computer-readable medium as recited in Claim 57, wherein instructions for selecting the initial bit reduction amount include instructions for selecting the initial bit reduction so as to reduce the aggregate number of the bits to an amount that is equal to or in between the maximum allowable number of bits and a sum of the maximum allowable number of bits and a number of channels in the second group of channels, and wherein instructions for reducing an aggregate number of the bits that can be assigned to the set of active channels include, after reducing the initial number of bits that can be assigned to all of the channels in the second group of channels by the initial bit reduction amount, instructions for further reducing the bits that can be assigned to channels in the second group of channels by one until the aggregate number of the bits is equal to the maximum allowable number of bits.

59. (CURRENTLY AMENDED) A computer-readable medium for assigning gain values to a plurality of channels in a discrete multi-tone modulation communications system, the computer-readable medium comprising instructions for assigning, to each channel in the plurality of channels, a gain value based upon a performance characteristic and a specified gain limit for each channel in the plurality of channels.

60. (CANCELED)

61. (ORIGINAL) A computer-readable medium as recited in Claim 59, wherein a sum of the gain values assigned to the plurality of channels satisfies a specified total gain limit.

62. (ORIGINAL) A computer-readable medium as recited in Claim 59, wherein instructions for assigning the gain value to each channel is further based upon a number of bits assigned to each channel in the plurality of channels.

63. (CURRENTLY AMENDED) A computer-readable medium for assigning bits to a discrete multi-tone modulation communications system, the computer-readable medium carrying instructions which, when executed by one or more processors, cause the one or more processors to perform steps of:

assigning, to one or more channels in a plurality of channels, a number of bits based on a performance characteristic of each of the one or more channels; and

assigning to each of the one or more channels a gain value based on the performance characteristic of each of the one or more ~~channels.~~ channels so as to set a margin for each of the one or more channels to be in a specified range.

64. (CANCELED)

65. (ORIGINAL) A computer-readable medium of claim 63, further comprising instructions for assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to equalize a margin for each of the one or more channels to be about the same.

66. (ORIGINAL) A computer-readable medium of claim 63, further comprising instructions for assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to satisfy a gain constraint on a maximum and a minimum of the gain value for each of the one or more channels.

67. (ORIGINAL) A computer-readable medium of claim 63, further comprising instructions for assigning to the one or more channels the gain value based on the performance characteristic of each of the one or more channels so as to satisfy a gain constraint on an aggregate total of the gain value for each of the one or more channels.

68. (ORIGINAL) A computer-readable medium as recited in claim 63, further comprising instructions for assigning to one or more channels the number of bits based on a signal to noise value for each of the one or more channels.

69. (NEW) An apparatus for assigning bits to a plurality of channels in a discrete multi-tone modulation communications system, the apparatus comprising a bit assignment and adjustment module configured to:

assign, to each of one or more channels in a plurality of channels, at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels;

determine an allowable number of bits that can be carried by each of one or more channels using a signal to noise measurement for each of the one or more channels;

for a first group of channels in the plurality of channels, wherein the allowable number of bits that can be carried by each channel in the first group of channels is less than a characteristic minimum bit value for channels in the discrete multi-tone modulation communications system, reduce the determined allowable number of bits for each channel in the first group of channels to zero; and

wherein the specified number of bits satisfies an aggregate constraint on the bits assigned to the plurality of channels, so that a total number of bits assigned to the plurality of channels is equal the specified number of bits.

70. (NEW) An apparatus as recited in Claim 69, wherein the bit assignment and adjustment module is further configured to assign at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels by assigning at least a portion of the specified number of bits based on a signal to noise characteristic of each of the one or more channels.

71. (NEW) An apparatus as recited in Claim 69, wherein the apparatus is configured to:

select a set of active channels from the plurality of channels;

assign to each channel in the set of active channels at least a portion of the specified number of bits; and

assign zero bits to each of the plurality of channels not in the active set of channels.

72. (NEW) An apparatus as recited in Claim 71, wherein the apparatus is further configured to use a performance characteristic of each channel in the plurality of channels to select the set of active channels from the plurality of channels.

73. (NEW) An apparatus as recited in Claim 72, wherein the apparatus is configured to use the performance characteristic of each channel in the plurality of channels by using a signal to noise measurement for each channel in the plurality of channels to select the set of active channels from the plurality of channels.

74. (NEW) An apparatus as recited in Claim 69, wherein the bit assignment and adjustment module is further configured to determine a number of bits that can be carried by each of the one or more channels using a signal to noise measurement for each of the one or more channels, and reduce the determined number of bits that can be carried by each of the one or more channels by an increment bit value so that the total number of bits assigned to the one or more channels is equal to the specified number of bits.

75. (NEW) An apparatus as recited in Claim 74, wherein the bit assignment and adjustment module is further configured to reduce the determined number of bits that can be carried by each of the one or more channels by an increment bit value by reducing the determined number of bits that can be carried by each of the one or more channels by an equal amount.

76. (NEW) An apparatus as recited in Claim 74, wherein the bit assignment and adjustment module is further configured to reduce the determined number of bits that can be carried by each of the one or more channels by an increment bit value by reducing the determined number of bits that can be carried by each of the one or more channels by an amount that is based on a characteristic minimum and maximum bit value for that channel.

77. (NEW) An apparatus as recited in Claim 69, wherein for a second group of channels in the plurality of channels, the allowable number of bits that can be carried by each channel

in a second group of channels is greater than the characteristic minimum bit value, and wherein the bit assignment and adjustment module is further configured to reduce the number of bits that can be carried by each of the channels in the second group of channels by at least an incremental value.

78. (NEW) An apparatus as recited in Claim 77, wherein the bit assignment and adjustment module is further configured to reduce the number of bits that can be carried by each of the channels in the second group by at least an incremental value only after reducing the determined allowable number of bits for each channel in the first group to zero.

79. (NEW) An apparatus as recited in Claim 77, wherein the bit assignment and adjustment module is further configured to reduce the number of bits that can be carried by one or more of the channels in the second group by one until a total number of bits that can be carried by the plurality of channels is equal to the specified number of bits.

80. (NEW) An apparatus as recited in Claim 69, wherein the apparatus further comprises a gain assignment module configured to assign a gain value to at least some of the plurality of channels based on the performance characteristic of the at least some of the plurality of channels.

81. (NEW) An apparatus as recited in Claim 69, wherein the apparatus further comprises a gain assignment module configured to assign a gain value to the one or more channels based on the performance characteristic of each channel in the one or more channels so that a margin of each channel in the one or more channels is approximately equal.

82. (NEW) An apparatus for assigning bits to channels in a discrete multi-tone modulation communications system, the apparatus comprising a bit assignment and adjustment module configured to:

determine an initial number of bits that can be assigned to each channel in a set of active channels based on the performance characteristic of each channel in the set of active channels;

identify, from the set of active channels, a first group of channels and a second group of channels, wherein the initial number of bits that can be assigned to each channel in the first group of channels is less than or equal to the initial number of bits that can be assigned to each channel in the second group of channels; and

reduce an aggregate number of bits assigned to the set of active channels so as to satisfy an constraint on the aggregate number of bits that can be assigned to the set of active channels by designating one or more channels in the first group of channels to be assigned zero bits.

83. (NEW) An apparatus as recited in Claim 82, wherein the bit assignment and adjustment module is further configured to reduce the aggregate number of the bits assigned to the set of active channels by designating one or more channels in the first group of channels to be assigned zero bits until the aggregate number of the bits satisfies the constraint on the aggregate number of bits.

84. (NEW) An apparatus as recited in Claim 82, wherein the bit assignment and adjustment module is further configured to determine an initial bit reduction amount for channels in the second group of channels, and reduce the aggregate number of the bits assigned to the set of active channels by reducing the initial number of bits assigned to one or more channels in the second group of channels by the initial bit reduction amount after designating all of the channels in the first group of channels to be assigned zero bits.

85. (NEW) An apparatus as recited in Claim 84, wherein the bit assignment and adjustment module is further configured to determine the initial bit reduction amount for channels in the second group of channels by selecting the initial bit reduction amount so as to not reduce the aggregate number of the bits below a maximum allowable number of bits that satisfies the constraint on the aggregate number of bits.

86. (NEW) An apparatus as recited in Claim 85, wherein the bit assignment and adjustment module is further configured to select the initial bit reduction amount by selecting the initial bit reduction so as to reduce the aggregate number of the bits to an amount that is

equal to or in between the maximum allowable number of bits and a sum of the maximum allowable number of bits and a number of channels in the second group of channels, and wherein the bit assignment and adjustment module is further configured to reduce the aggregate number of the bits assigned to the set of active channels by, after reducing the initial number of bits assigned to all of the channels in the second group of channels by the initial bit reduction amount, further reducing the bits assigned to channels in the second group of channels by one until the aggregate number of the bits is equal to the maximum allowable number of bits.

87. (NEW) An apparatus for assigning gain values to a plurality of channels in a discrete multi-tone modulation communications system, the apparatus comprising:

a gain adjustment module configured to assign, to each channel in the plurality of channels, a gain value based upon a performance characteristic and a specified gain limit for each channel in the plurality of channels.

88. (NEW) An apparatus as recited in Claim 87, wherein the gain adjustment module is further configured to assign the gain value to each channel in the plurality of channels so that a sum of the gain values assigned to the plurality of channels satisfies a specified aggregate gain limit.

89. (NEW) An apparatus as recited in Claim 87, wherein the gain adjustment module is further configured to assign the gain value to each channel based upon a number of bits assigned to channel in the plurality of channels.